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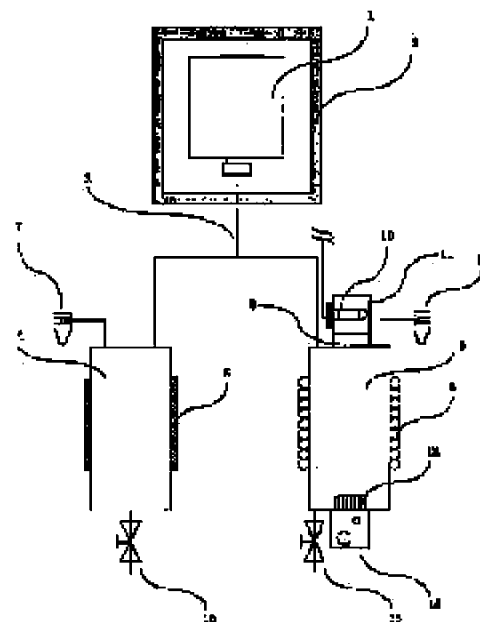
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(54) DRINKING WATER DISPENSER

(57)Abstract:

PROBLEM TO BE SOLVED: To perform sterilization with ultraviolet rays by a method wherein a flange having a quartz window installed therein is arranged at a cold-water tank of a drinking water dispenser, ultraviolet rays are radiated from outside the cold-water tank through the quartz window and drinking water in the cold water tank is agitated.

SOLUTION: Drinking water stored in a cold-water tank 5 is sterilized with ultraviolet rays radiated from an ultraviolet ray lamp through a quartz window of a flange 9. In addition, in concurrent with sterilization by ultraviolet rays, a magnet 12 and a stirring device acting as an agitating mechanism agitate the drinking water within the cold-water tank 5. With such an arrangement as above, entire drinking water within the cold-water tank 5 can be sterilized. Further, in the case of normal sterilization with ultraviolet rays, water temperature is increased by heat generated by the ultraviolet ray lamp 10. However, in accordance with this constitution, since the drinking water within the cold-water tank 5 is agitated, heat generated by the ultraviolet ray lamp 10 can be dispersed over the entire drinking water and increasing in water temperature can be restricted as minimum as possible.



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CLAIMS

[Claim(s)]

[Claim 1]By a potable water dispenser which supplies drinking water from a container in which drinking water was filled. In a potable water dispenser with a function which is provided with a cold water tank which cools drinking water at least, and supplies chilled water, A potable water dispenser characterized by carrying out ultraviolet ray pasteurization while providing a flange which attached a window of quartz to a cold water tank, irradiating with ultraviolet rays through this quartz window from the cold water tank exterior and stirring drinking water in a cold water tank further.

[Claim 2]A potable water dispenser stirring drinking water in the cold water tank according to claim 1 with a magnet and a stirrer.

[Claim 3]A potable water dispenser stirring drinking water in the cold water tank according to claim 1 with a magnet and a magnet coil.

[Claim 4]A potable water dispenser characterized for stirring drinking water in the cold water tank according to claim 1 with an agitating motor and agitating blades by things.

[Claim 5]A potable water dispenser using a U tube type lamp, a straight pipe type lamp, or a non-electrode type lamp for an ultraviolet ray lamp used for the ultraviolet ray pasteurization according to claim 4 from claim 1.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention is a device which performs warming, cooling, or warming and cooling for drinking water, and relates to a potable water dispenser with the function which supplies warm water, chilled water or warm water, and chilled water.

[0002]

[Description of the Prior Art]In the dispenser which supplies drinking water, bacteria may breed in drinking water by prolonged use or a device stop. Since the drinking water in a hot water storage tank is always heated by 80-90 **, a possibility that bacteria will breed is very low, but bacteria may remain and the drinking water in a cold water tank and piping may breed. When contamination by bacteria starts in the mineral water which does not contain residual chlorine in particular, the proliferation rate of the bacteria is dramatically quick so that it increases to an order.

[0003]In order to cope with such a problem, it is necessary to form the bacteria filter which used the hollow fiber etc. in the inside of a dispenser, or to carry out washing by drugs or hot water periodically in the potable water dispenser which uses mineral water as drinking water.

[0004]

[Problem(s) to be Solved by the Invention]However, in the bacteria filter using the above-mentioned hollow fiber etc., sterilization of what can perform disinfection of drinking water cannot be performed. Therefore, within a filter, bacteria breed very easily and the maintenance of frequent exchange of a filter, washing, etc. is needed. In order to use a bacteria filter, the circulating route for circulating drinking water is needed, and the piping configuration in a dispenser becomes complicated.

[0005]In washing by drugs or hot water, time and effort is taken dramatically, it is necessary to take discharge of the drugs after washing, etc. into consideration, and it is also especially expected by drugs washing that the problem of the taste by the drugs which remain in a minute amount at the drinking water after washing remains.

[0006]

[Means for Solving the Problem]In order to solve above-mentioned SUBJECT, suppose that a ultraviolet water sterilizer is attached to a potable water dispenser, and ultraviolet ray pasteurization of drinking water is performed in this invention. That is, in this invention, a flange which attached a window of quartz is provided in a cold water tank of a potable water dispenser, it is irradiated with ultraviolet rays through this quartz window from the cold water tank exterior, and a dispenser carrying out ultraviolet ray pasteurization is provided further, stirring drinking water in a cold water tank. Here, stirring by magnet, stirring by a stirrer and a magnet, and a magnet coil or stirring using an agitating motor and agitating blades is applicable to a stirring method of drinking water in a cold water tank.

[0007]A method of sterilization by the above-mentioned ultraviolet rays has the following advantages.

(1) Since it is not disinfection by a bacteria filter using a hollow fiber etc. but the ultraviolet ray pasteurization using an ultraviolet ray lamp, a more positive bactericidal effect is acquired. Since drinking water in a cold water tank is stirred, ultraviolet rays are irradiated by the whole drinking water and positive sterilization can be performed.

[0008](2) An ultraviolet ray lamp, a magnet, a stirrer, an agitating motor, agitating blades, etc. which are using section articles do not need a special maintenance.

(3) Since a circulating route like a bacteria filter is unnecessary, composition of piping in a device does not become complicated.

(4) Since drugs are not used, a problem of the taste does not arise.

[0009]

[Embodiment of the Invention]Hereafter, this invention is explained based on three examples.

[Example 1] As one of the examples of this invention, by the potable water dispenser provided with a bag-in-box shaped container (it is hereafter indicated as a BIB shaped container), the hot water storage tank, the cold water tank, the ultraviolet water sterilizer, and the agitator style. At the time of the ultraviolet ray pasteurization of the drinking water in a cold water tank, the example for performing drinking water stirring with a magnet and a stirrer is shown in drawing 1.

[0010]In this figure, the bag-in-box shaped container 1 containing drinking water is installed in the container storage part 2. Water output port is attached to the PE liner of the BIB shaped container 1, and the BIB shaped container 1 is connected to the hot water storage tank 4 and the cold water tank 5 of a dispenser through the connecting instrument and the inflow piping 3 of a dispenser.

[0011]The drinking water in the BIB shaped container 1 is stored in the hot water storage tank 4 and the cold water tank 5 through the inflow piping 3 by a natural fall. Since the PE liner of the BIB shaped container 1 whose drinking water decreased by outflow is sealed, only the volume integral of the drinking water which air did not flow but flowed out of the exterior contracts it. Therefore, a possibility with air that contamination will be carried out has a very low PE liner of the BIB shaped container 1.

[0012]The drinking water stored by the hot water storage tank 4 is heated by 80 °C - 90 °C with the band heater 6 installed in the circumference of the hot water storage tank 4. Since this drinking water stored by the hot water storage tank 4 is maintained at the elevated temperature, a possibility that bacteria will breed is very low. At the time of use of warm water, it is supplied by operation of the warm water extraction valve 7 as warm water from a dispenser. The drain valve 15 is formed in the hot water storage tank 4.

[0013]The drinking water stored by the cold water tank 5 is installed in the circumference of the cold water tank 5, and is cooled by about 4-10 °C with the cooling pipe 8 connected to the freezer. This drinking water stored by the cold water tank 5 lets the quartz window of the flange 9 which attached the quartz window pass with a ultraviolet water sterilizer, and is sterilized by the ultraviolet rays irradiated from the ultraviolet ray lamp 10. This ultraviolet ray lamp 10 is covered by the lamp cover 11, and ultraviolet rays do not leak outside. Using the magnet 12 and the stirrer 13 as an agitator style, the drinking water in the cold water tank 5 is stirred, and, simultaneously with ultraviolet ray pasteurization, thereby, the whole drinking water in the cold water tank 5 is sterilized. In the usual ultraviolet ray pasteurization, although water temperature rises by generation of heat by an ultraviolet ray lamp, since the drinking water in a cold water tank is stirred here, the whole drinking water can be made to be able to distribute the heat from a lamp, and a water temperature rise can be suppressed to the minimum. At the time of use of chilled water, it is supplied by operation of the chilled water extraction valve 14 as chilled water out of a dispenser. The drain valve 16 is formed in the cold water tank 5.

[0014]The sectional view of the portion of the ultraviolet water sterilizer attached to the cold water tank 5 of Example 1 is shown in drawing 2. As shown in this figure, there is the opening 9a for irradiating with the ultraviolet rays from the ultraviolet ray lamp 10 in the cold water tank 5, and the ultraviolet ray lamp [of this opening 9a] 10

and cold water tank 5 side is divided by the quartz plate 9b which lets ultraviolet rays pass.

[0015]The flange 9 which attached the quartz window comprises the quartz plate 9b, the packing 9c, the pressure plate 9d, and the flange 9e. Since the quartz plate 9b and the packing 9c in the upper and lower sides of the periphery are bound tight by the pressure plate 9d and the flange 9e, they do not leak from the opening 9a.

[0016]The ultraviolet ray lamp 10 used for Example 1 is shown in drawing 3. Although the ultraviolet ray lamp of the U tube was used in this example, even if it uses a straight pipe type lamp, the ultraviolet ray lamp of the non-electrode type which a lamp life can use semipermanently for a long time may be used. Drawing 4 is the result of measuring aging of the number of general bacteria in Example 1.

[0017]whenever it performs ultraviolet ray pasteurization to a bacteria having violent growth of the order of a beam in one day if ultraviolet ray pasteurization is not performed, a bacteria is stabilized in below regulation of Food Sanitation Law, i.e., 100 piece / mL, -- prevention **. Safe and sanitary drinking water can be provided by this.

[Example 2] As another example of this invention, the potable water dispenser provided with a BIB shaped container, the hot water storage tank, the cold water tank, the ultraviolet water sterilizer, and the agitator style shows the example which performs drinking water stirring with a magnet and a magnet coil to drawing 5 at the time of the ultraviolet ray pasteurization of the drinking water in a cold water tank.

[0018]This Example 2 and Example 1 differ in an agitator style, in this example, they are energized to the magnet coil 17, rotate the magnet 12, and are stirring drinking water.

[Example 3] As another example of this invention, the potable water dispenser provided with a BIB shaped container, the hot water storage tank, the cold water tank, the ultraviolet water sterilizer, and the agitator style shows the example which performs drinking water stirring with an agitating motor and agitating blades to drawing 6 at the time of the ultraviolet ray pasteurization of the drinking water in a cold water tank.

[0019]This Example 3 and Example 1 differ in the fitting location and agitator style of a ultraviolet water sterilizer, and in this example. The flange 9, the ultraviolet ray lamp 10, and the lamp cover 11 which installed the quartz window are installed in the bottom of the cold water tank 5, the agitating blades 19 are looked like [the agitating motor 18] from the upper surface of the cold water tank 5, and the drinking water in the cold water tank 5 is stirred more.

[0020]

[Effect of the Invention]Since sterilization by UV irradiation is performed according to this invention, compared with disinfection by the bacteria filter using the conventional hollow fiber etc., a bactericidal effect is higher. Sterilization of the whole drinking water in a cold water tank is possible. Safe and sanitary drinking water can be provided by this.

[0021]An ultraviolet ray lamp, a magnet, a stirrer, an agitating motor, agitating blades, etc. which are using section articles do not need a special maintenance. Since a circulating route like the bacteria filter using a hollow fiber etc. is unnecessary, the composition of piping in a device does not become complicated. Since drugs are not used, the problem of the taste does not arise. Therefore, delicious water can be provided.

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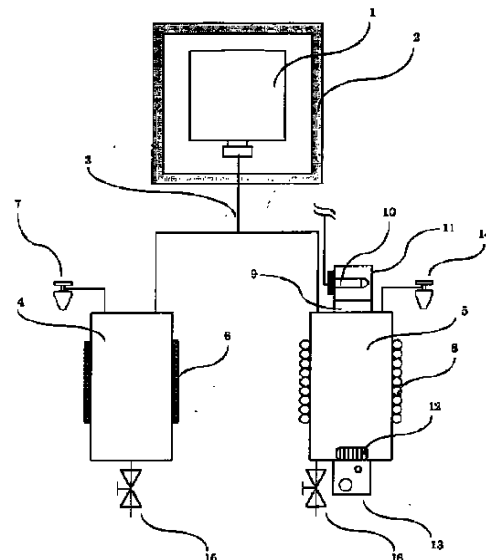
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(54)【発明の名称】 飲料水ディスペンサ

(57)【要約】

【課題】冷水を供給する飲料水ディスペンサに、中空糸膜等の細菌ろ過装置を設置した場合、飲料水の除菌はできるが殺菌はできないため、装置の頻繁な交換や洗浄等が必要となる。さらに細菌ろ過装置のための飲料水の循環経路が必要で、配管構成が複雑になる。また薬剤や熱水による洗浄は手間がかかり、薬剤洗浄では味覚上の問題が残ることもある。本発明の目的は、上記の問題を解決した殺菌装置を持つ飲料水ディスペンサを提供することにある。

【解決手段】飲料水ディスペンサの冷水タンクに石英の窓を取り付け、冷水タンク外部からこの石英窓を通して紫外線を照射し、さらに冷水タンク中の飲料水を、マグネットとスターラー、マグネットと電磁コイル、または攪拌モーターと攪拌羽根、を用いた攪拌等により、紫外線殺菌する。



- 1: B I B型容器 2: 容器収納部 3: 流入配管
4: 温水タンク 5: 冷水タンク 6: パンドヒーター
7: 温水抽出バルブ 8: 冷却パイプ
9: 石英窓を設置したフランジ 10: 紫外線ランプ
11: ランプカバー 12: マグネット 13: スターラー
14: 冷水抽出バルブ 15, 16: ドレインバルブ